

## Claims

We claim:

- 1 1. A system for summarizing multimedia, comprising:
  - 2 means for storing a compressed multimedia file partitioned into a sequence
  - 3 of segments, and a metadata file including index information and an importance
  - 4 level information for each segment in the sequence, the importance level being
  - 5 continuous over a closed interval;
  - 6 means for selecting an importance level threshold in the closed interval; and
  - 7 means for reproducing, using the index information, only segments of the
  - 8 multimedia having a particular importance level greater than the importance level
  - 9 threshold.
- 1 2. The system of claim 1, in which the sequence of the segments is temporal, and
- 2 the index information includes a start time and an end time of each
- 3 segment.
- 1 3. The system of claim 1, in which the sequence of the segments is temporal, and
- 2 the index information includes a frame number.
- 1 4. The system of claim 1, in which the multimedia is compressed.
- 1 5. The system of claim 1, in which the multimedia includes video and audio
- 2 signals.

- 1 6. The system of claim 1, in which the importance level is contained in a file that is  
2 distinct from the multimedia file.
- 1 7. The system of claim 1, in which the importance level is a real number.
- 1 8. The system of claim 1, in which the multimedia comprises text and binary data.
- 1 9. The system of claim 1, in which the importance level threshold is expressed as a  
2 range of real number values.
- 1 10. The system of claim 1, in which the importance level threshold is expressed as  
2 a plurality of ranges of real number values.
- 1 11. The system of claim 1, in which the importance level threshold is viewer  
2 selected.
- 1 12. The system of claim 1, in which the importance level threshold is selected  
2 automatically.
- 1 13. The system of claim 1, in which only segments of the multimedia having a  
2 particular importance level less than the importance level threshold are reproduced.
- 1 14. The system of claim 1, in which the multimedia file includes a plurality of  
2 programs, and further comprising:
  - 3 means for reproducing only segments of the plurality of programs having a  
4 particular importance level greater than the importance level threshold.

1 15. The system of claim 1, further comprising:  
2       means for specifying an abstraction ratio, the abstraction ratio representing  
3       the importance level threshold.

1 16. The system of claim 1, in which the segments are ordered according to the  
2 importance level, and further comprising:  
3       means for reproducing the segments in a descending order of the importance  
4 level.

1 17. The system of claim 1, in which the reproducing terminates after a  
2 predetermined amount of time.

1 18. The system of claim 1, further comprising:  
2       means for recording the compressed multimedia and the metadata file on the  
3 means for storing.

1 19. The system of claim 1, in which only segments greater than a time threshold  
2 are reproduced.

1 20. The system of claim 19, in which segments shorter than the time threshold are  
2 extended to satisfy the time threshold.

1 21. The system of claim 20, in which the extending is additive.

1 22. The system of claim 20, in which the extending is multiplicative.

1 23. The system of claim 1, further comprising:  
2       means for searching the multimedia to locate a particular segment to begin  
3       the reproducing.

1 24. The system of claim 1, in which the means for storing is an optical storage  
2       disk.

1 25. The system of claim 1, in which the means for storing is a magnetic storage  
2       device.

1 26. The system of claim 1, further comprising:  
2       means for extracting the importance level and the indexing information  
3       while decoding the multimedia file.

1 27. A method for summarizing multimedia, comprising:  
2       storing a compressed multimedia file partitioned into a sequence of  
3       segments;  
4       storing a metadata file including index information and an importance level  
5       for each segment in the sequence, the importance level being continuous over a  
6       closed interval;  
7       selecting an importance level threshold in the closed interval; and  
8       reproducing, using the index information, only segments of the multimedia  
9       having a particular importance level greater than the importance level threshold.

1 28. The method of claim 27, in which the sequence of the segments is temporal,  
2       and the index information includes a start time and an end time of each  
3       segment.

1 29. The method of claim 27, in which the sequence of the segments is temporal,  
2 and the index information includes a frame number.

1 30. The method of claim 27, further comprising:  
2 compressing the multimedia.

1 31. The method of claim 27, in which the multimedia includes video and audio  
2 signals.

1 32. The method of claim 27, in which the importance level is contained in a file  
2 that is distinct from the multimedia file.

1 33. The method of claim 27, in which the importance level is a real number.

1 34. The method of claim 27, in which the multimedia comprises multiplexed video  
2 and audio signals.

1 35. The method of claim 27, in which the importance level threshold is expressed  
2 as a range of real number values.

1 36. The method of claim 27, in which the importance level threshold is expressed  
2 as a plurality of ranges of real number values.

1 37. The method of claim 27, in which the importance level threshold is viewer  
2 selected.

1 38. The method of claim 27, in which the importance level threshold is selected  
2 automatically.

1 39. The method of claim 27, in which only segments of the multimedia having a  
2 particular importance level less than the importance level threshold are reproduced.

1 40. The method of claim 27, in which the multimedia file includes a plurality of  
2 programs, and further comprising:

3 reproducing only segments of the plurality of programs having a particular  
4 importance level greater than the importance level threshold.

1 41. The method of claim 27, further comprising:

2 specifying an abstraction ratio, the abstraction ratio representing the  
3 importance level threshold.

1 42. The method of claim 27, in which the segments are ordered according to the  
2 importance level, and further comprising:

3 reproducing the segments in a descending order of the importance level.

1 43. The method of claim 27, in which the reproducing terminates after a  
2 predetermined amount of time.

1 44. The method of claim 27, further comprising:

2 recording the compressed multimedia and the metadata file on the means for  
3 storing.

1 45. The method of claim 27, in which only segments greater than a time threshold  
2 are reproduced.

1 46. The method of claim 45, in which segments shorter than the time threshold are  
2 extended to satisfy the time threshold.

1 47. The method of claim 46, in which the extending is additive.

1 48. The method of claim 46, in which the extending is multiplicative.

1 49. The method of claim 27, further comprising:  
2       searching the multimedia to locate a particular segment to begin the  
3 reproducing.

1 50. The method of claim 27, in which the multimedia file and the metadata file are  
2 stored on an optical storage disk.

1 51. The method of claim 27, in which the multimedia file and the metadata file are  
2 stored on a magnetic storage device.

1 52. The method of claim 27, further comprising:  
2 extracting the importance level and the indexing information from the multimedia  
3 file while decoding the multimedia file.

1 53. A computer readable medium, comprising:  
2       a compressed multimedia file partitioned into a sequence of segments; and

3           a metadata file including index information and an importance level  
4   information for each segment in the sequence, the importance information being  
5   continuous over a closed interval, the compressed multimedia file and the metadata  
6   file, when read by a computer using the index information, causes the computer to  
7   reproduce only segments of the multimedia having a particular importance level  
8   greater than a importance level threshold.

1   54. The medium of claim 53, in which the sequence of the segments is temporal,  
2   and the index information includes a start time and an end time of each  
3   segment.

1   55. The medium of claim 53, in which the sequence of the segments is temporal,  
2   and the index information includes a frame number.

1   56. The medium of claim 53, in which the multimedia is compressed.

1   57. The medium of claim 53, in which the multimedia includes video and audio.

1   58. The medium of claim 53, in which the importance level information is  
2   contained in a file that is distinct from the multimedia file.

1   59. The medium of claim 53, in which the importance level is a real number.

2  
3   60. The medium of claim 53, in which the multimedia comprises multiplexed  
4   video and audio signals.

1 61. The medium of claim 53, in which the segments are ordered according to the  
2 importance level.

1 62. The medium of claim 53 is an optical storage disc.

1 63. The medium of claim 53 is a magnetic storage device.

1 64. The medium of claim 53, further comprising:  
2 flags for indicating a validity of the metadata.